

Request for Special Temporary Authority

Pursuant to Section 25.120 of the Rules and Regulations of the Federal Communications Commission (the “Rules”), 47 C.F.R. § 25.120, Harris CapRock Communications, Inc. (“Harris CapRock”) respectfully requests special temporary authority (“STA”) to operate an earth station onboard vessel (“ESV”) terminal – Harris CapRock’s new multi-band SpaceTrack Model ST5000-2.4 – in the C-band and Ku-band for sea trial testing and demonstrations onboard a foreign-registered cruise ship, the Carnival Valor, currently based in Port Canaveral, Florida. Harris CapRock respectfully requests an STA to commence operations on October 2, 2015 to test terminal transmissions in the 5.925-6.425 GHz band and the 14.0-14.5 GHz band. The requested authority enhances current experimental STAs granted to Harris CapRock to test the ST5000-2.4 at specific inland locations¹ by enabling its testing in real-world maritime conditions, and is similar to proposed test operations on other Carnival ships.²

Discussion. Harris CapRock seeks an STA for a period of 60 days,³ commencing on Friday, October 2, 2015, to test terminal uplink transmissions in the conventional C-band (*i.e.*, 5.925-6.425 GHz) and Ku-band (*i.e.*, 14.0-14.5 GHz band) fixed-satellite service (“FSS”) spectrum.⁴ The terminals will receive in conventional C-band and Ku-

¹ See File No. 0734-EX-ST-2015; *see also* File No. 0454-EX-ST-2015.

² See File Nos. SES-STA-20150805-00511 & SES-MS-20150728-00474. Harris

² See File Nos. SES-STA-20150805-00511 & SES-MS-20150728-00474. Harris CapRock previously proposed testing the subject ESV terminal on the Carnival Sunshine, coordinated that vessel’s routes at C-band, and that application remains pending before the Commission. Carnival seeks to test the same terminal on the Valor to have the flexibility to test the terminal on either of both of the vessels during the requested STA period.

³ Harris CapRock is filing a separate 180-day STA request concurrently with this application.

⁴ Harris CapRock references the full conventional C-band and Ku-band as a matter of convenience only. Harris CapRock recognizes that the extreme lower and upper edges of the Ku-band uplink spectrum are shared with NASA TDRSS and radio astronomy operations, respectively. Harris CapRock will comply with the exclusions zones required

band downlink spectrum (*i.e.*, 3.700-4.200 GHz and 11.7-12.2 GHz, respectively).⁵ Harris CapRock is developing and testing the new multi-band ESV terminal to communicate with C-band and Ku-band geostationary satellite orbit (“GSO”) satellites in the maritime context. The terminal is also designed to operate using Ka-band frequencies, although no authority for such operations is requested in this application.

Harris CapRock was recently granted authority to test the ST5000-2.4 terminal at specific fixed inland locations.⁶ Grant of this STA authority will allow Harris CapRock to further develop and demonstrate the commercial viability of its ST5000-2.4 model in real-world conditions. Exhibit A contains relevant information relating to the earth station technical parameters, antenna performance, radiation hazard and general antenna specifications for the ST5000-2.4 terminal.

Grant of the requested authority will serve the public interest by allowing Harris CapRock to continue development of this new line of antennas that would greatly benefit government and commercial maritime customers. Moreover, Harris CapRock certifies that the proposed operations will be conducted on a non-interference basis and will comply with Sections 25.221 and 25.222 of the Commission’s rules.⁷ Finally, the International Bureau has previously granted authority for operations of ESVs on foreign-flagged vessels,⁸ and Harris CapRock’s proposed testing operations will be much more limited in scope and duration.

Sea Trials. Harris CapRock seeks to test the new ST5000-2.4 terminal in the C- and Ku-band on the Carnival Valor cruise ship, which will be ported in Port Canaveral, Florida. During testing, the Valor will serve routes in the eastern and western Caribbean – including San Juan, Puerto Rico and Charlotte Amalie, St. Thomas (U.S. Virgin

in Section 25.222 or accept a limitation on STA authority that excludes the shared frequencies to the extent necessary or appropriate for grant of the instant request.

⁵ Harris CapRock seeks no protection for downlink (receive) operations proposed in this application.

⁶ *See* File No. 0734-EX-ST-2015.

⁷ *See* Exhibit D.

⁸ *See* File No. SES-MSC-20150206-00066; *see* File No. SES-MSC-20140318-00150.

Islands). Harris CapRock has coordinated these routes via the traditional frequency coordination process and will ensure that its operations do not cause harmful interference to potentially affected parties.

The ST5000-2.4 terminals will be added to the vessels satellite communications suite for purposes of test performance in C- and Ku-band frequencies in real-world conditions. Harris CapRock will test the terminals in the Ku-band with the U.S.-licensed Intelsat 701 satellite and in the C-band with Intelsat 701 and the U.S.-licensed Galaxy 28 satellites. The ST-5000 2.4m terminal has been previously authorized to communicate with the Intelsat 701 satellite,⁹ and will communicate with Galaxy 28 in accordance with the authorized parameters of this FCC-licensed satellite.

Harris CapRock has completed final coordination of C-band frequencies at Port Canaveral, Florida (*see* Exhibit C). Furthermore, Harris CapRock has completed preliminary route coordination with affected U.S.-licensed fixed service facilities in San Juan, Puerto Rico and Charlotte Amalie, St. Thomas, where transmission muting will be implemented to avoid potential interference (*see* Exhibit B). Harris CapRock will file the final coordination report, which will be identical in substance to the interim report, as soon as it becomes available. Finally, as further discussed in Exhibit D, Harris CapRock will ensure that its proposed operations will avoid interference to other co-frequency systems and services, and will otherwise comply with Commission policies embodied in its C-band and Ku-band ESV rules.¹⁰

Harris CapRock's coordination efforts will ensure that no interference will be caused by the proposed C-band temporary operations and the absence of co-frequency operations in assigned Ku-band frequencies will prevent interference from temporary operations of the ST5000-2.4 terminal in those bands.¹¹ In both bands, Harris CapRock

⁹ *See* File No. 0734-EX-ST-2015.

¹⁰ *See, e.g.*, 47 C.F.R. §§ 25.221-222.

¹¹ Harris CapRock's commercial authority imposes additional operational restrictions to protect other co-frequency operations and an application to add the ST5000-2.4 terminal to Harris CapRock's commercial ESV license is currently pending before the Commission. *See* File No. SES-MOD-20150915-00599 (Call Sign E060157).

agrees to accept all interference from other authorized spectrum users and will immediately suspend operations in the event of interference to other systems and services.

Expedited Consideration under Section 25.120. Harris CapRock respectfully requests expedited processing of this STA request under Section 25.120. Section 25.120(a) provides that STA requests should be filed at least three working days prior to the date of commencement of the proposed operations. Here, Harris CapRock is proposing to commence testing operations on Friday, October 2nd.

Pursuant to Section 25.120(b)(3), Harris CapRock is filing for a 60-day STA to help facilitate the expedited processing of this request and ensure it has appropriate authorization by the testing commencement date. Because Harris CapRock has already filed a request for regular authority for the service in connection with the proposed operations¹² and a concurrent 180-day STA request for the same testing on the Carnival Valor, the Commission may grant a 60-day authorization.¹³ Given the unique, time sensitive nature of the present situation, expedited processing of this STA request is warranted and will ensure that the proposed temporary operations are properly authorized by the Commission in the short term and the long term.

Harris CapRock has expended considerable effort in preparing equipment and personnel for testing on the subject cruise ship to ensure the commencement of operations on October 2nd. Grant of the requested authority will serve the public interest by allowing continued development of a new line of ESV terminals that could greatly benefit government and commercial customers and accelerate the expansion of maritime satellite communications services. In addition, authorizing near-term development of this terminal will ensure that Harris CapRock (a U.S. equipment manufacturer and service provider) and other U.S. interests can participate more fully in the development of these important new services. Accordingly, Harris CapRock respectfully submits that the public interest will be served by grant of the requested STA commencing October 2nd.

Point of Contact and Other Information. The Harris CapRock point of contact

¹² See File No. SES-MOD-20150915-00599 (Call Sign E060157).

¹³ Harris CapRock is filing the longer STA request to ensure that it has authority in the event its license modification to add the ST5000-2.4m terminal remains pending beyond the initial 60-day STA period.

with the authority to suspend immediately the proposed ESV terminal operations is:

Mike Horn
Harris CapRock Communications
1025 West NASA Blvd.
Melbourne, FL USA 32919
Phone: 321-724-3384
Mobile: 321-258-4414
Text: [3212584414@text.att.net](tel:3212584414)
E-mail: mhorn01@harris.com

The secondary point of contact for the proposed temporary operations is:

Harris CapRock Network Control Center
Managed Network Services 24x7 support
4400 S. Sam Houston Pkwy, E.
Houston, Texas 77046
Office: (832) 668-2775
Fax: (713) 987-2894
Email Address: hcc-hou-csc@harris.com

The following exhibits contain additional information relating to the proposed temporary operations:

- Exhibit A: ST5000-2.4 Terminal Information
 - Description and Technical Characteristics;
 - Annex 1 – Antenna Performance Plots for C-band & Ku-band (demonstrating compliance with the off-axis EIRP spectral density mask, including co-pol and cross-pol);
 - Annex 2 – Gain Pattern Plots for C-band & Ku-band (range test plots of the antenna gain patterns in both C-band and Ku-band at top, middle and bottom of each band);
 - Annex 3 – Radiation Hazard Studies for C-band & Ku-band (establishing near-field and far-field region distances). Harris CapRock will follow standard industry procedures to mitigate potential radiation hazards to personnel in controlled environments. (The terminals do not transmit in uncontrolled areas at Harris CapRock test facilities);
 - Annex 4 – Tracking Report; and
 - Annex 5 – FCC Declarations of Conformity.
- Exhibit B: Preliminary C-band Coordination Analysis & Area of Operations
- Exhibit C: Port Canaveral, Florida C-band Coordination Report
- Exhibit D: Sections 25.221 & 25.222 Compliance Statements

Conclusion. The requested STA will allow Harris CapRock to continue development of its new ST5000-2.4 terminal to communicate with C-band and Ku-band satellites, and will not result in harmful interference to or require protection from other authorized spectrum users. Therefore, the proposed operations are consistent with Commission's rules and policies and with the public interest. Harris CapRock respectfully requests that the STA be granted for 60 days commencing on October 2, 2015.